



CLUB REPEATERS VE3TBR

Phone: 807-767-7661
Listen: 146.820 MHz
Txmit: 146.220 MHz
Listen: 444.825 MHz
Txmit: 449.825 MHz

VE3YQT

Phone: 807-767-5492
Listen: 147.060 MHz
Txmit: 146.460 MHz

VA3OLA

Listen: 53.050MHz
Txmit: 52.050MHz

WEEKLY BREAKFASTS

Saturdays 9:30 a.m.
Blue Parrot Restaurant
376 Lisgar Street
(Off Memorial Avenue)

2m MINI-NET

Mondays 7:00 p.m.
VE3YQT Repeater.

NEXT MEETING



7:30 p.m. Room 214
McIntyre Building
Confederation College

SHORTWAVES

Don't you just love winter? With any luck, all this snow should last until the start of next winter. This has been the first year that I actually needed snowshoes to go to and get from work.

While browsing at T&S Electronics, I stumbled across some 40+ year old *QST*, *73* and *CQ* ham magazines. Boy, have times changed and yet, some things never do. A lot of strange and novel antenna designs came out of this period. Some of them, I'm going to try to build to see how they would perform today. Cushcraft was really innovative with its antennas. Those amateurs were certainly not dull and boring and used their noodles! It's strange reading (what is now history) about the first delta loops and quads, 6 metre sporadic E experiments in their present tense. Amateurs were actively involved in experimentation and provided data to the scientists to find out just what was happening up in the atmosphere with radio signals.

Most amateurs built more than half of their stations but even 40 years ago, hams bemoaned the lack of interest in the new amateurs when it came to building anything, even a simple dipole. TVI was a scourge that nearly every magazine had an article about solving. No one bitched and moaned about having to learn Morse code. In fact, the FCC, in 1951, brought in the Novice class. Five year olds were getting amateur radio licenses, and operating 5 w.p.m. code on 80 metres.. They had to. After one year, you either upgraded your Novice ticket or you packed it in. Once the Morse code standard is replaced by higher technical standards (Internet, SATCOM, Spread Spectrum operations) of the

21st century, hams will wish that all they had to learn was code.

No one bothered to reply to my *Ham to Ham* column in last month's issue of *HI-Q*. I had expected someone to have something to say about Ed's, VA3ER's open letter either for or against. It was well-written and to the point and very true. What's wrong people? Hello!

I was reading *CB Radio* (another new *CQ* publication). The CBers in Germany have been allowed to transmit TV signals, packet and other digital modes on 11 metres! Why? Because the majority support their national organization; are politically aware and very active experimenting and building and pushing the envelope. They go out and just do it! What's wrong with North Americans? Hello!

Many amateurs, in different "hobby" fields, have made significant discoveries. It seems that we are sadly lacking something when compared to the rest of the amateur radio world around us.—Ed.

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Founding President
P.J. (Pat) O'Shea, VE3FW
1881-1972

In honour of the memory of our founding president, Mr. P.J. (Pat) O'Shea, the club callsign is VE3FW.

Senate

Bill Roberts, VE3ARN
Keith Fiske, VE3JQ
Bert Lambert, VE3BKY
Ray Greer, VE3CH
Hugh Elliott, VE3EDW
Bill Klemacki, VE3AJ

Executive Board

President: T. Stewardson, VE3TKA	577-9439
Vice Pres: Ed Baumann, VE3SNW	622-1216
Secretary: Norm Bell, VE3XRC	577-9316
Treasurer: "Skip" Wright, VE3BBS	767-2307
Directors: Ian Mellis, VA3RIM	577-1628
Dave Horne, VA3DVE	344-9325
Don Bel, VA3DPB	473-5482
John Watson, VE3GTX	683-3199
Mem.Sec: John Watson, VE3GTX	683-3199
Past Pres: Mark Vukovich, VE3VUK	345-5856
HI-Q Ed: Robert Mazur, VA3ROM	344-7731

Club and Newsletter Information

HI-Q is published by the Lakehead Amateur Radio Club, Inc., an Ontario registered non-profit corporation. The opinions expressed or implied in issues of *HI-Q* are those of the author. The LARC assumes no responsibility for the accuracy or the information submitted.

Material in *HI-Q* may be copied for non-profit use provided that credit is given to the source. Contributions related to amateur radio, especially those articles of interest to northwestern Ontario amateurs are encouraged. Material can be submitted in WordPerfect® format or as a text file or via fax to: 807-345-2688 or via packet radio to: VA3ROM@VE3TKA#NON.ON.CAN.NA or voice mail on the VE3TBR repeater to user 159 or via Email to: bob.mazur@oln.com. Send material or dated announcements no later than the 20th of the month in which it is to appear.

To reduce production and distribution costs, advertising at the following per issued rates is accepted: full-page—\$60.00, 1/2 page—\$40.00, 1/4 page—\$20.00 and 1/8 page—\$15.00. Reduced rates (1/3 off) are available upon receipt of advance payment for 10 issues (one full year). Send your ad copy and cheque (payable to the LARC) to the club address listed below. Advertising in *HI-Q* does not imply an endorsement or recommendation of the product or service by the LARC.

LARC membership fees are set for the year as follows: regular—\$30.00, associate—\$20.00, associate (attending ham classes)—\$80.00, student (attending school full-time)—\$15.00 and family—\$30.00 plus \$10.00 for each additional family member living at the same address. *HI-Q* is sent to all LARC members but only one copy is mailed to each address.

Mailing Address

Please send all club correspondence to the following address: The Lakehead Amateur Radio Club, Inc., Suite 184, 1100C Memorial Avenue, Thunder Bay, ON, P7B 4A3, Canada.

Internet Home Page

The LARC has an Internet web site home page that is sponsored by Len, VA3LEB. The address is <http://www.foxnet.net/larc/larc.html>. Stop by for a visit and get your *HI-Q* electronically.

Thunder Bay Voyageur Award

The LARC, in cooperation with the City of Thunder Bay, sponsors this award. Anyone working or monitoring 5 Thunder Bay amateur radio stations qualifies. Send your log copy with callsigns, dates, times, frequencies and \$2.00 Canadian to the club address listed on this page.

The Mailbox FREE BBS

Members of the LARC can join a free BBS service, sponsored by Gary Elder. You need a computer with a terminal program and a modem.

To try out the BBS or to register with Gary, call 475-7405. Set your modem for 8 data bits, 1 stop bit and No parity with ANSI terminal emulation.

FOR SALE

TR44 ANTENNA ROTATOR AND CONTROL HEAD. HAS BEEN USED ON TH3 JUNIOR HF ANTENNA AND CAN BE USED FOR VHF (6 OR 2 METRES).
IN GOOD WORKING CONDITION. CALL DAVE, VE3AVS AT 344-8949 AROUND THE SUPPER HOUR (5-6 P.M.).

Meeting Minutes by Norm, VE3XRC

Minutes of the Annual Dinner Meeting of the Lakehead Amateur Radio Club at the Landmark Hotel Dawson Road, Thunder Bay, Ontario on February 8, 1996

The meeting was called to order by the President, VE3TKA, Terry Stewardson at 7:00 p.m. Grace was said by VE3JAB, Bob Bishop.

Following a delicious prime rib buffet enjoyed by 42 members and guests, a short business meeting was held.

Minutes of the previous meeting

The minutes of the previous meeting held January 11, 1996 were published in detail in the February edition of *HI-Q* and mailed to all members. **Motion:** moved by VA3BRN, Gerry Burney and seconded by VE3GTX, John Watson that the minutes be accepted as published. **Carried.**

Treasurer's Report

VE3BBS, Skip Wright reported the annual 1995-1996 financial statement as of February 8, 1996 as follows:

Balance as of January 11, 1996:

\$2,588.83

Expenses: 212.13

Income: 50.00

Balance as of February 8, 1996:

\$2,426.70

Motion: moved by VE3SNW, Ed Baumann and seconded by VE3GTX, John Watson that the Treasurer's report be accepted. **Carried.**

Fund Raising Project

VA3RIM, Ian Mellis has come up with a fund raising project for the Club. He is prepared to make call sign plaques at a cost of \$15.00 each with \$10.00 going to the Club. His sales manager VA3EAP, Judy LeFevre is taking orders (18 orders were received at the dinner).

Radio Amateurs of Canada (RAC)

VE3JAB, Bob Bishop stated that at last count, there were 45,000 amateurs in Canada.

Girl Guides On The Air

VE3TKA, Terry Stewardson announced that February 17th and 18th is the annual Girl Guides On The Air. He has been approached by one group of Guides (8 girls) who are interested in participating in amateur radio.

Adjournment: moved by VE3AJ, Bill Klemacki that the meeting be adjourned. **Carried.**

50/50 Draw: winner of the 50/50 Draw was Carol Watson (XYL of VE3GTX).

Following a short break, the guest speaker was introduced by VE3XRC, Norm Bell. Norm introduced O.P.P. Constable Mike Potvin who is the Thunder Bay District Crimestoppers' Coordinator. Mike gave an overview of the Crimestoppers program and how it works. As well, Mike had several goodies to give away. He was quite willing to answer questions from those in attendance.

Following the guest speaker, numerous door prizes were drawn for.

Icelandic Anniversary Award

The Icelandic Radio Association (IRA) is sponsoring an award to commemorate the 50th anniversary of their existence. It is available to all amateurs and SWLs and required contacts (or SWL reception reports) during the calendar year 1996. All bands and modes may be used. Amateurs outside of Iceland must contact at least two Icelandic Amateur Radio stations.

Note: stations operating /TF are not

valid for the award. Contacts don't have to be confirmed by when applying for the award, you should supply a radio log showing all QSO details including call, date, time, band, mode and signal report.

The first award issued to each DXCC country will be endorsed as such and a single band/mode achievement will be endorsed upon your request.

Fee for the award is 8 IRCs or \$5.00

U.S. dollars. Applications must reach the awards manager before the end of December 1997.

Apply to:

IRA Awards Manager,
Brynjolfur Jonsson, TF5BW
PO Box 121
IS-602 Akureyri ICELAND

Thx to Ted Melinkosky, K1BV: The K1BV DX Awards Directory.

Special Event Station

From March 1st until May 31st, look for VG3CRC, the Canadian Red Cross Headquarters special event station, on the HF bands, celebrating the 100th anniversary of the Red Cross in Canada. Also, look for other provincial Red Cross stations with special call signs. Special QSL card via bureau or SAE+IRC to callbook address (VA3CRC). *Tnx to Ric Guidone via the Ohio/Penn State DX Bulletin.*

Internet News

Bell Canada will provide Internet access called Sympatico. You can buy startup packages from Bell Phone Centres which includes the software and 50 "free" hours for the 1st month.

The CRTC has given interim approval for Home ISDN Service. Technically known as 2B+D service the B refers to B Channel or 64 kbps, 2B is 128 kbps access to the Internet. The ISDN terminates on a "black box" device rather than a modem. It works well in theory, when compared to the current 28.8 kbps modems but not all ISPs (Internet Service Providers) support ISDN and neither may the local network or the accessed server.

Rogers Cable is also planning to introduce cable access to the Internet except at speeds of 20 Mbps upstream (on the network) and 128 kbps downstream (to the customer). Since Canada's Internet backbone operates at 45 Mbps, at best, it will not handle many customers downloading at 20 Mbps! The Internet backbone network (CANARIE/CA*net) is not scheduled for upgrade to gigabit per second speeds until the next century. The point: don't buy into home ISDN unless you really need it to run your own bank, hi! *Tnx to Andy, VE3INI.*

Ham License Fees

RAC has learned that radio amateurs will not face a license fee increase when the 1996 license renewals are mailed out. It had been rumoured that the license fees would be increased as a consequence of the realignment of the Radio Regulations with the new "Radio Communication Act" of 1989. Industry Canada has revised the Radio Regulations and had expected to publish them in the Canada Gazette. *Tnx to RAC News Bulletin, January 1996, Editor: Ken Pulfer, VE3PU.*

The Canada Gazette is available via free direct email from the Internet. You can electronically subscribe and will get all updates to the Act (in both official languages!) automatically.—Ed.

Code(Fish) Practice

Here's how Wayne, VA3LOG sharpens up his Morse code practice sessions without QRM from the family. As well, it's a family affair where everyone can participate.

Using a computer and a code program, the family plays a game based on the rules of "Go Fish." However, instead of asking out loud for a card, when it's a player's turn, he or she pushes the required key down on the computer keyboard that resembles the letter or number: i.e. K for a king, Q for a queen, 1 for a one, etc. The computer then sounds out the Morse code character. The children enjoy pressing the keys which at the same time teaches them to distinguish dits and dahs, thereby learning Morse code along with their father!

Wayne uses Super Morse version 3.5 with an AMSTRAD portable computer (tnx to Bob, VA3ROM). As well, he's active in code practice with Dave, VA3AVS on 146.94 simplex or on the VE3TBR repeater on Monday nights, just after the 2 metre mini-net.

Ham Humour

"One winter, at the QTH where I was located, the snow was so deep that when the beam rotator developed trouble, I had trouble finding the tower. Then, when I did, I had to dig "down" through 4 feet of snow to get to the rotator motor. The tower was 50 feet high! *From March 1974 High-Q, Editor: Frank Start, VE3AJ.*

NWO Callbooks

The LARC is taking orders for the new, revised and improved Northwestern Ontario Callbooks. The price should be in the the \$5 to \$7 range. You can contact either Skip, VE3BBS or Terry, VE3TKA via packet or landline to place your order(s).

T & S Radio Electronics

VE3TKA

Terry Stewardson

VE3BBS

Skip Wright

**2052 Dawson Road
Thunder Bay, Ontario
P7B 5E3**

PHONE (807) 767-5224 FAX (807) 768-8164

FOR AMATEURS BY AMATEURS

*Across from Five Mile School on Highway 102
at the Dawson Road Country Store*

The Internet and You

I've only been cruising the Internet for a few weeks but it's been enough to give me a small picture of just what's out there and what potential the Internet has to offer for casual users, Net Nerds, businesses and entrepreneurs.

While I'm not too overly impressed (the Internet is still in its infancy and I've been working with computers for 20 years), picture yourself in one big library with access to every snippet of information store therein. Now picture that library as large as the entire world! Get the picture? There's so much data out there, that's it's easy to be blinded and overloaded with the visual, aural and textual presentations.

You can download program files, play sound (voice of music), talk to other Internet users with a microphone and a soundcard, send video (still and stop action) and shop till you drop. All from the comfort of your home. You can travel to Paris to tour the Louvre; stop by

Buckingham Palace; then zip over to Australia to check out some amateur radio clubs down under. It's all a local call as far as the phone company is concerned for billing purposes.

Most people already have the necessary hardware to "surf" the Net. The required software is easily available and a lot of it is freeware with no cost or fees charged for the use of the programs.

I had thought that the Net was going to be difficult and complicated to "surf" and work through the "World Wide Web." It's a web, because, just like a spider's, you can get yourself really tied up. But, with the click of a mouse button, you can backtrack on your trail. Once online, it's so simple to get information and jump around, like using the library's GEAC® system. The most popular Internet software is called Netscape®. It is very easy to use and the whole process involves clicking on buttons and links with a minimal amount of

typing. You can send email (electronic mail) to any person on the Net (and there are millions!) You can drop President Bill Clinton, Vice-President Gore a line and of course the Prime Minister (The Terminator) Jean Cretien.

There are literally hundreds of millions of accessible databases around the world. Are you a Star Trek® fan? Then you can visit Paramount Pictures web site and join the crew of any starship or space station of your choice.

As far as amateur radio goes, once Spread Spectrum and the Internet meet. Look out! You won't need antennas, towers, hi-price radios, etc. You'll be able to work the world in FM, surround-sound, direct video/stereo, full colour glory. Data transfer rates, in a few years, will make the 28.8 kbps modems look like Packet radio. Picture the Basic exam in 5 years. No code, just Internet, Spread Spectrum, data streaming and SATCOM theory!—Ed.

The 250 Most Used Words by Rob, VE3FLB

People who are learning Morse code or just brushing up on their verbal skills may find the lists below helpful. It has been long recognized that people who succeed with code are able to hear the music of the characters. Once this is accomplished they may find themselves eventually hearing the music of whole words as well!

The lists below may be used with your CW computer programs to develop this ability. Educational psychologists have reduced the English language to the 250 most commonly used words. Why not make use of them to supplement the specialty ham words and numbers that we also use?

Group A : ONE QUARTER OF THE WORDS USED! (12 words)!

a I it the and in of to he is that was

*THE NEXT 88 WORDS, along with the first 12, make up 50% of what we use!
(A small group of 20 and a larger group of 68).*

Group B : "A SMALL GROUP OF 20 WORDS"

all had said as have so at be him they but his we are not with for on one you

68 WORDS DIVIDED INTO THREE GROUPS

Group C : (23/68)

about call first like must over there what an came from little my no right this where back can get go look new

Group D: (23/68)

see two been come has made now she when which before could her here make off only some up want who will big

Group G: (35/150)

thing box car cat nothing any away going good next once think three children picture pig bad because best got green hand open own play time too tree cow cup dinner place rabbit bird black

Group H: (40/150)

head help put ran under us doll door road sea shop blue home read very boy bring day house how jump red room round walk white why egg end farm fish sister street sun dog don't eat keep know run

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Review: The ICOM 706 (IC-706)

Smaller than a breadbox and more fun than a barrel of monkeys!

After I wrote this article, I got onto the Internet and discovered a couple of reviews that have not been published and two modifications for the IC-706. One addresses the problem of poor reception above 148MHz. Apparently, ICOM engineers wired the bandpass filter incorrectly! Later models of the IC-706 have this mod done at the factory before sale. The second mod opens up the transmit to be continuous all-mode from 1.6MHz through to 6 metres!

Description

The IC-706 is a small (about 6-1/2"W x 2-1/4"H x 7-3/4"D) and light (about 5.5 lb.). Besides being all-mode from 160 metres up to and including 2 metres (AM/SSB/CW and RTTY) yes, 2 metres AM! The radio has extended receive up to and including 200MHz. The case is metal or a metal composite, so the radio has a solid feel.

Major Features

All band, all mode operation (AM/CW/SSB/FM and RTTY) from 160 metres throughout 2 metres!

A built-in preamp gives you an extra 20dB "boost" on weakly received signals.

Built-in electronic iambic keyer for really enjoyable CW operations. ICOM provides the jacks and connectors for RTTY and PACKET as well as a few spare fuses. The IC-706's protection fuse (not the ones in the power cable) is inside the rig, meaning that it's not too quick or easy to change a fuse in the field or in your car.

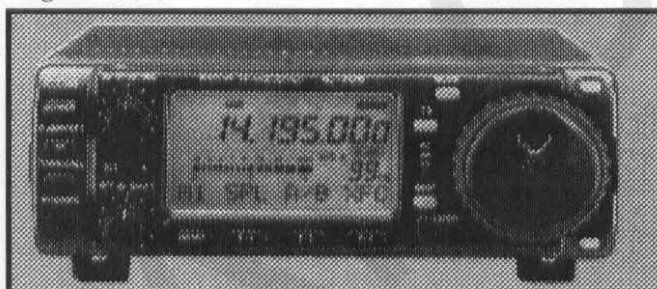
You can electronically adjust your power settings from 5 to 100 watts in 10 watt increments on HF and 6 metres and from 1/2 to 10 watts in 1 watt increments. That's one of the

outstanding features of this rig, all functions are electronically controlled. No dip switches, manual switches or plethora of buttons or knobs to twiddle. All the magic is in the onboard microcomputer.

I don't want to recite the spec sheets and ICOM advertising. You all can read about the features and bells and whistles, I'm just going to shed some light on the less "advertised" features.

Problem Areas

First, let's get the sore spots out of the way first. Laurie, VE3BCD pointed out that the fan exhaust is not protected with a screen to keep bugs, like spiders, from crawling into the back of the rig and making a home for themselves. This would apply to mobile installations. Bob,



VE3BHN pointed out that you have to run the speech compression and ALC at full to be really heard. Bob says that all ICOM rigs need to be driven hard to put out a proper signal and has done on-air comparisons. Wally, VA3EI feels that it's the problem with the stock hand-mike and that a good quality one like a Heil would solve that problem.

No DTMF hand-mike nor a push-button control hand-mike to operate the rig's control panel. If this is supposed to be a mobile rig, let's add some mobile features and convinces.

The noise blanker distorts the speaker audio badly when receiving strong (S9+) signals. Who uses a noise blanker on strong signals? Well, if you forget to turn it off, it can drive you crazy because you think

that you have a receive problem with the distorted audio. It took me a while to figure out what was causing the the problem. Turning the NB off resulted in clear and clean audio.

One last point. There are 2 mike jacks on the rig. One on the front control panel and one in the back. Don't plug the mike into the back jack unless you want to have to use a bobby pin or nail file to try to spring the darn thing free.

The receive frequency is advertised as from 150kHz (actually 30kHz) up to and including 200MHz but it's like a speedometer that goes up to 200 kph. ICOM states that only the ham bands are guaranteed for specifications. I've found that below 500kHz and above 150MHz the receiver performance falls off rapidly. *(There is an easy mod to solve this early model problem.—Ed.)*

As for the speaker audio, it's okay, considering the small internal top-mounted speaker but you should really consider investing in a good quality external speaker and a DTMF hand-mike for 2 metre work. ICOM technical support says that the 2 metre hand-mike

HM-77 will work with the IC-706. The only controls on the stock hand-mike are up/down frequency or memory channel functions.

As for filters, you have your choice of one and only one CW or SSB narrow filter. Easy to install but only one filter?! You can, however, easily add a speech synthesizer, which attaches to the onboard speaker and I would recommend this for mobile operators or for those with poor eyesight.

Comparison Tests

I've compared it to my trusty Yaesu FT-101E a Kenwood TS-440S and the Realistic HTX-212 mobile, 2 metre rig. The Yaesu has the best sounding speaker audio, coming out of that 30 pounds of steel. I was surprised at

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Spread Spectrum: The Future of Radio

Imagine if you will, an amateur radio transceiver that can send a milliwatt signal around the world that will sound like a kilowatt and not cause TVI, RFI or interference with others with no QRN, no QRM.

It's not science fiction, it's spread spectrum and it's going to change amateur radio like nothing before ever has. Even more profound than when SSB superceded AM in the 1950's.

Probably, one of the most exciting revolutions in amateur radio, computer technology and other forms of communications and data exchange is just around the corner. It's been used by the military, police agencies and the CIA, et al for decades. It's called spread spectrum (SS). This technology isn't new. It's been around since the 1930's. However, it's only been in the past 10 years that experiments have begun using spread spectrum for amateur radio purposes. Presently, it's restricted to frequencies above 420MHz.

Spread spectrum technology is based upon the work by famous mathematician Claude Shannon. He published his historic paper "A Mathematical Theory of Communications" in 1948. By trading power for bandwidth, the power density at any point of the bandwidth can be very small. In fact, well below the noise floor of the receiver! The U.S. Navy Global Positioning System

(GPS) is an example of what is called direct sequence spread spectrum (DSSS). Instead of using one frequency with a fixed bandwidth it transmits very quickly on every possible frequency within a defined bandwidth or band.

Even if you "collided" with someone else's signal, it would only be for a split microsecond and then you both go off on your random merry ways. The old "clicker, popper stoppers" for vinyl records did the same trick, removing pops and clicks but not the recorded sound. The human ear is as easily fooled as is the eye.

The only problem with direct sequence spread spectrum is the intricate (therefore expensive circuitry). The transmitter must spread its signal over a wide bandwidth according to a prearranged code or protocol, while the receiver must synchronize on this code and reconstruct the received energy to produce a usable signal. Since the received signal is below the noise level of the internal components of the receiver itself, pseudo-random noise (white noise) must be introduced at the transmitter. We are talking about signals that are around 1 femto (.000000000000001) watt at the receiver!

The second method of spread spectrum is easier to understand and implement. If your radio had 100, 20 metre frequencies stored in the

memory channels and you changed channels at a known rate and pattern to each frequency, very quickly, you would have what's called frequency-hopping spread spectrum. Of course, the receiver at the other end would have to have the same frequencies programmed into its memory channels and use the same channel jump and timing pattern.

There will, of course, have to be defined protocols so that you can find someone "hopping" around like a bunny in heat. This is also needed to prevent someone from encrypting signals with an unknown sequence. The state monitors (police, CIA, government agencies) want to be able to eavesdrop on our communications.

So, the 20 metre band might use protocol C, 15 metres protocol B, etc. Your rig would automatically select the protocol and transmit/receive mode either DSSS or frequency-hopping. I think that for amateur radio, frequency-hopping is the cheapest and easiest mode to build into existing rigs, although direct-sequence spread spectrum is probably the mode that will dominate by the mid-21st century.

To make a prediction. I think that within 10 years most of us will be using spread spectrum technology not only in amateur radio but with our computers, satellite phones, GPS (of course) in our cars. Hand-held global Internet and voice or digital data communications—Ed.

Callsign Boards for Sale

Ian, VA3RIM has made a gracious offer to the Lakehead Amateur Radio Club. He is putting his talents as a woodworker, his "therapy" as he calls it, to help the club raise some extra funds.

You can get your callsign made of pine letters and numbers attached to a light or dark mahogany backboard complete with a chain, ready for

hanging. It's the perfect gift for that hard-to-buy-for ham in the family. The callsign board will really give that extra touch to your radio shack. The letters are 2" high and the board is about 18-1/4" long by 4-1/2".

The cost of one callsign board is only \$15.00 and Ian is donating \$10.00 of that to the club! There's no PST nor GST. You can order yours

from T&S Radio Electronics aka Skip or Terry, in person or by phone at 706-5224.

Let's "beat" the blues and blahs of winter away with your own callsign board and show some club support and spirit. Ian does really great work and has a natural talent for working with wood. At the annual dinner 22 orders were placed!—Ed.

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how well the radio did in receiving signals and I think that the Kenwood has a bit better sensitivity, to my ears, but just barely. The IC-706 really performs on 2 metres. The audio out of the local repeater had a better sound from the ICOM than a HTX-212 which surprised me. I finally put up a proper 6 metre antenna and tried out VA3OLA. It sounds fine from the few signal reports that I have received.

The Iambic Keyer

For CW operators, the built-in Iambic keyer is a sheer joy to use and according to Stephen, VE3DP sounds just Heavenly on the air!

Yes, you can use this rig for RTTY (with AFSK and FSK keying) plus HF and VHF packet radio. All the ports and jacks are on the back of the rig. Plus the CW/keyer jacks are full-size 1/4" phono plugs but the headphone jack is a 1/8" jack.

Crossband Operations

For split frequency and satellite fans, you can work easily work cross-band. Transmit up on 2 metres and receive on 10 metres. There are two antenna jacks in the back. One is for HF and 6 metres and one is for 2 metres. Switching between antennas is electronic and automatic so you don't have to manually switch between antennas. You can set any transmit frequency and mode and any receive frequency and mode for cross-band and duplex operation. Too bad that you can't transmit all-mode, all frequencies, sigh! (*Once, again, a mod is available to have continuous tx/rx up to 6 metres.—Ed.*)

A nice feature for repeater work is the built in electronic CTCSS generator. Unlike other rigs which require you build or buy an add-on CTCSS kit or one that's programmed via DIP switches. You can program a 10 metre, 6 metre or 2 metre repeater with the splits and CTCSS tones and save that to a memory channel (up to 98 + one call channel for 2 metres + 2 frequency scan edge frequencies). You can scan channels in three ways.

Use and Operation

The IC-706 is easy to learn to use and program. You just have to read the instruction manual (30 pages of it) a couple of times with the rig in front of you. And, speaking of programming, the rig has a built-in computer interface that can be hooked up to your computer via a serial/TTL interface. Ramsey Kits sells one made by JCOM. It's a lot cheaper than the ICOM CI-V interface and doesn't need external power. But, the CI-V can control up to 4 separate radios.

On HF and VHF the rig does a good job. If you can hear them, you can work them. I also listen to the local police frequencies and commercial FM stations using the radio like a VHF scanner. You can scan the memory channels, a frequency range or a specific ham band. Here again, it does a good job. In fact, for the money (about \$1,800 Canadian or \$1,300 U.S.) the IC-706 does a all-around good job. It won't beat out a contest machine but you'll have more fun!

Modifications

I did the two modifications to my IC-706. They seem to work okay but ICOM will void your warranty once these mods are done. But, they are well worth the pounding heart and sweaty palms when you fire the rig back up to see if they work or if you have a very expensive paperweight! That's what ham radio is all about.

Overall

On a scale from 1 to 10, I'd rate the IC-706 as an 8. This is the rig for Basic licensees to get. You can work 2 and 6 metres right out of the box. When you do upgrade with code you're already to go on HF.

The IC-706 rig has been selling like hotcakes and has become, in a short time, the fastest selling rig in amateur radio history. Some places are selling over 200 a month and are ordering in lots of 20 at a time! For a while, there was a 3 month waiting list in the States!

The only thing it can't do is play CDs or cassette tapes, yet!—Ed.

(Continued from page 5)

Group I: (38/150)

sat saw say wish work fun hat hill
table tea today every last school
woman horse top fast father left
should fell find let live long sing sit
would yes year bus jam letter milk toy
train water did do if into me more or
our their them well your by down
just much other out then went were
old

**ANOTHER 150 WORDS used
"rather less"**

Group F: (37/150)

after five man soon apple money
again fly four many may stop take
baby bag morning always found
men tell ball Mrs. am ask gave girl
mother Mr. than these bed book
name night another give never

Group G: (35/150)

thing box car cat nothing any away
going good next once think three
children picture pig bad because
best got green hand open own play
time too tree cow cup dinner place
rabbit bird black

Group H: (40/150)

head help put ran under us doll
door road sea shop blue home read
very boy bring day house how jump
red room round walk white why
egg end farm fish sister street sun
dog don't eat keep know run

Group I: (38/150)

sat saw say wish work fun hat hill
table tea today every last school
woman horse top fast father left
should fell find let live long sing sit
would yes year bus jam letter milk
toy train water

The average person's vocabulary is around 850 words. By practicing these words at high Morse code speeds, you won't be learning anything new just how the words sound at 30 or 40 words per minute. You'll be ragchewing with the best brasspounders.—Ed.